Quantum Technology Center (QTC)

Overview

Ronald Walsworth

UMD — leader in quantum science

University of Colorado--Boulder

Boulder, CO

#6 in **Quantum** (tie)

University of Maryland--College Park

College Park, MD

#6 in **Quantum** (tie)

Joint Quantum Institute (JQI)

Joint Center for Quantum Information and Computer Science (QuICS)

Harvard University

Cambridge, MA

#1 in **Quantum**

California Institute of Technology

Pasadena, CA

#2 in **Quantum**

Massachusetts Institute of Technology

Cambridge, MA

#3 in **Quantum**

University of California--Berkeley

Berkeley, CA

#4 in **Quantum**

Stanford University

Stanford, CA

#5 in **Quantum**

UMD — leader in quantum science & engineering

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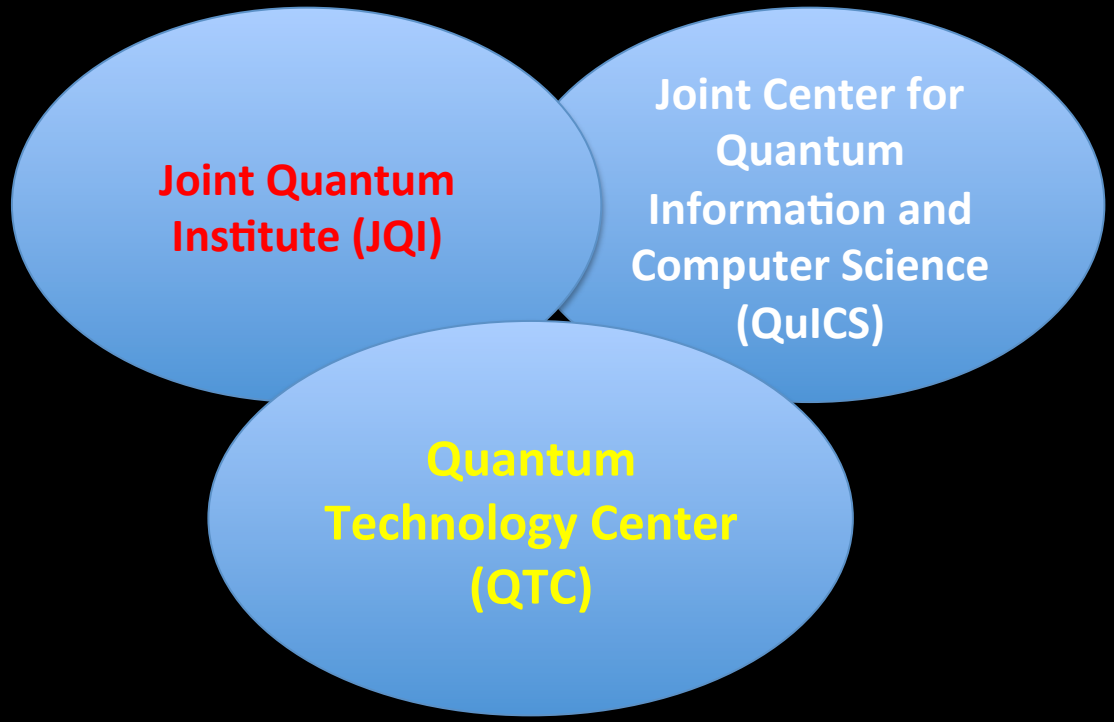

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Stanford, CA

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QUANTUM FRONTIERS

REPORT ON COMMUNITY INPU
STRATEGY FOR QUANTUM INF

Product of

THE WHITE HOU

NATIONAL QUANTUM COORDI

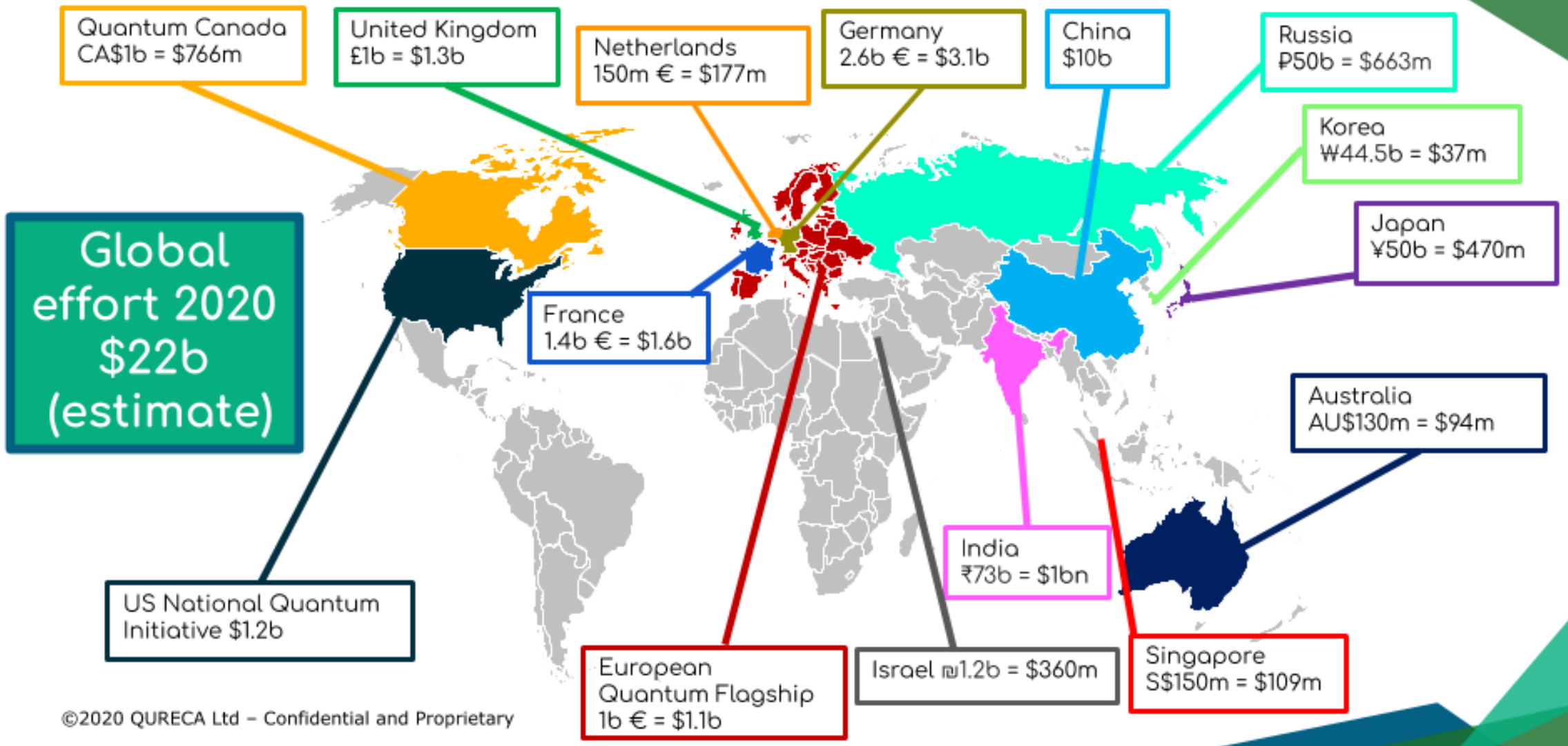
October 2020

2. Building the Discipline of Quantum Engineering

"Quantum engineering should be established as a new discipline or a sub-discipline in engineering schools which requires developing curricula and textbooks both at undergraduate and graduate levels." *– RFI response*

"As new quantum information science-based technology ('quantum technology' for short) develops, the U.S. will need a new type of profession that has not previously existed: the quantum engineer. Quantum engineers will not be—and will not need to be—specialists in the detailed physics of QIS but will instead be expert in the use and extended application of the new systems, tools and possibilities enabled by QIS."
– RFI response

Quantum effort worldwide



Big tech companies — Investing in quantum

aws

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ABOUT AWS

About AWS

Global Infrastructure

Quantum computing is now available on AWS through Amazon Braket

IBM | Quantum | Network | Technology | Resources | Launch IBM Quantum Experience

Tomorrow's computing, today

We design our quantum computers to solve very specific, complex computational problems that are absolutely impossible to solve using classical supercomputers, no matter how large or powerful.

Get started today

IBM announces the roadmap to 1,000 qubit systems | Read more

Microsoft | Quantum | Vision | Azure Quantum | Development kit | Labs | Quantum Network | Resources | All Microsoft

Read how Microsoft is responding to the COVID-19 outbreak, and get resources to help

Experience quantum impact today

To deliver on the promise of quantum computing and solve the problems that will forever change our future, we need a quantum computer that scales. We are focused on ground-breaking innovation at every layer of the quantum stack, from applications and solutions to cryogenic control and qubits. Our unique approach pushes the boundaries of computing to create unprecedented possibilities for our world.

Watch now

The New York Times

Opinion

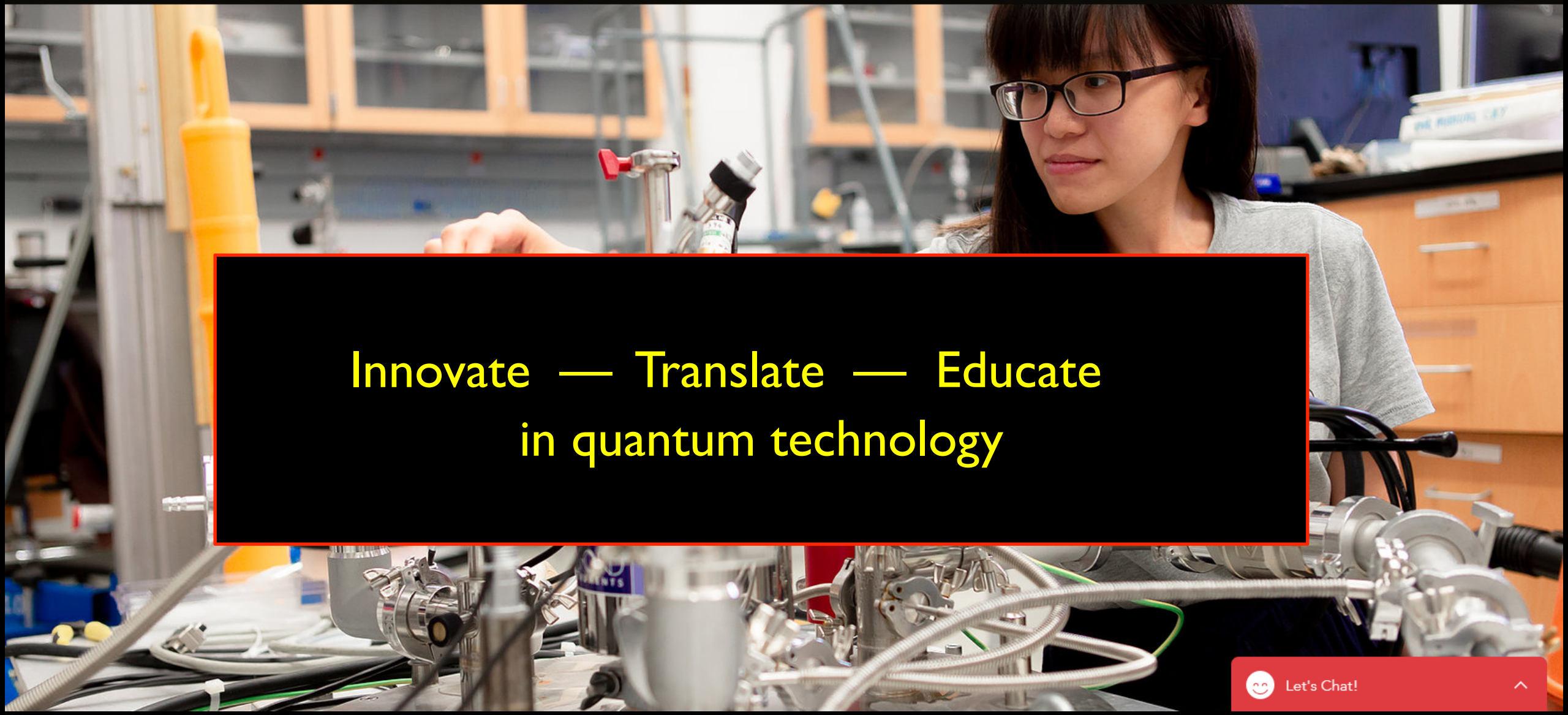
Why Google's Quantum Supremacy Milestone Matters

qtc.umd.edu

QTC mission

QUANTUM TECHNOLOGY CENTER

About Research Education Partners News Events Contact



Innovate — Translate — Educate
in quantum technology

Let's Chat!

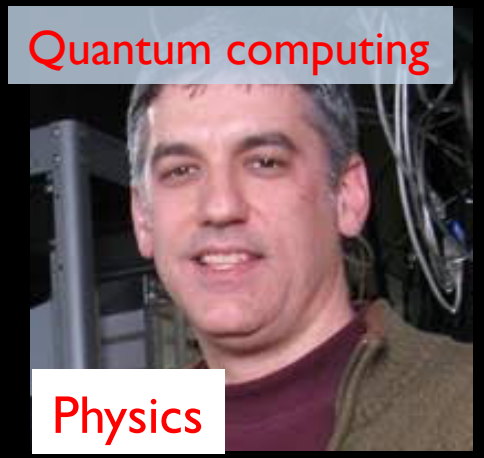
QTC home — E.A. Fernandez IDEA Factory

- 60,000 sq ft
- Privately funded
- Opening late 2021
- Unique partnership space for QTC

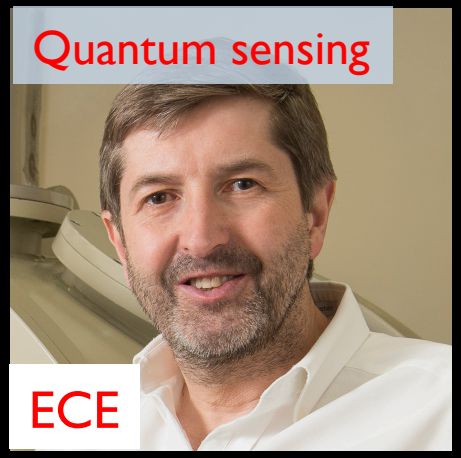
QTC@UMD Fellows

Innovate – Translate – Educate

Mohammad Hafezi

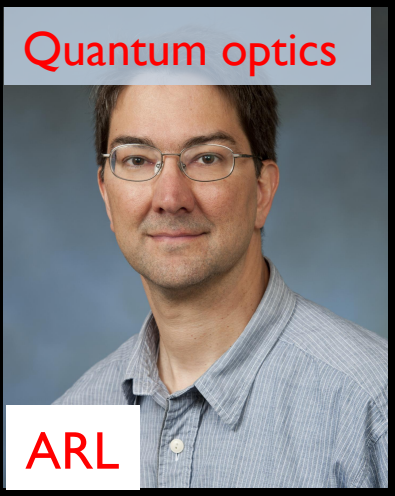


Chris Monroe



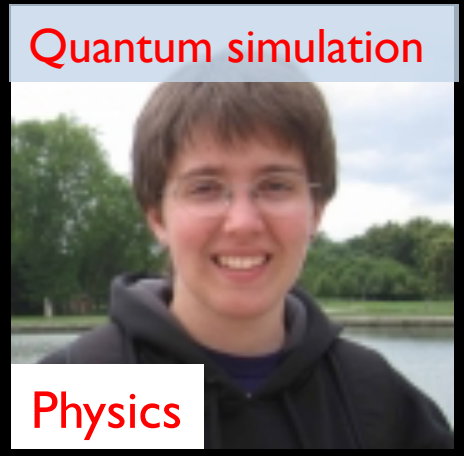
Ron Walsworth
Director

Edo Waks
Associate Director

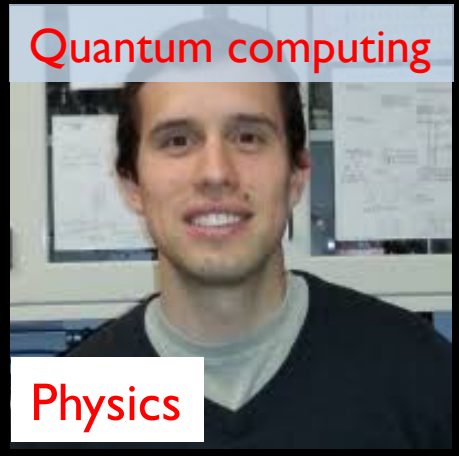


Fredrik Fatemi
Associate Director

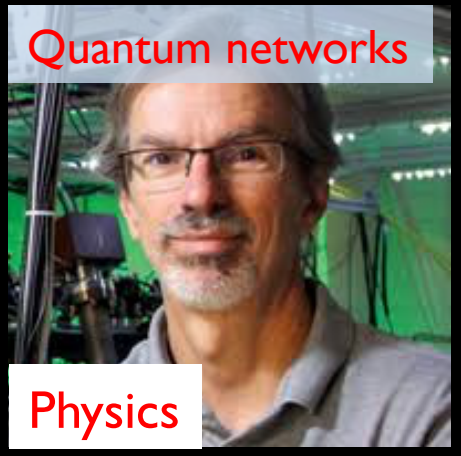
Cheng Gong



Alicia Kollar



Norbert Linke



Steve Rolston

QTC Staff & Govt. Partners

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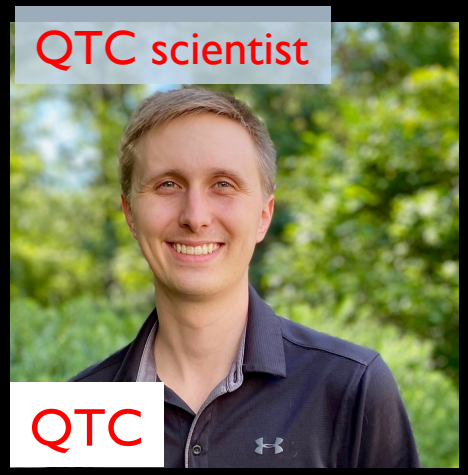
Amanda Stein

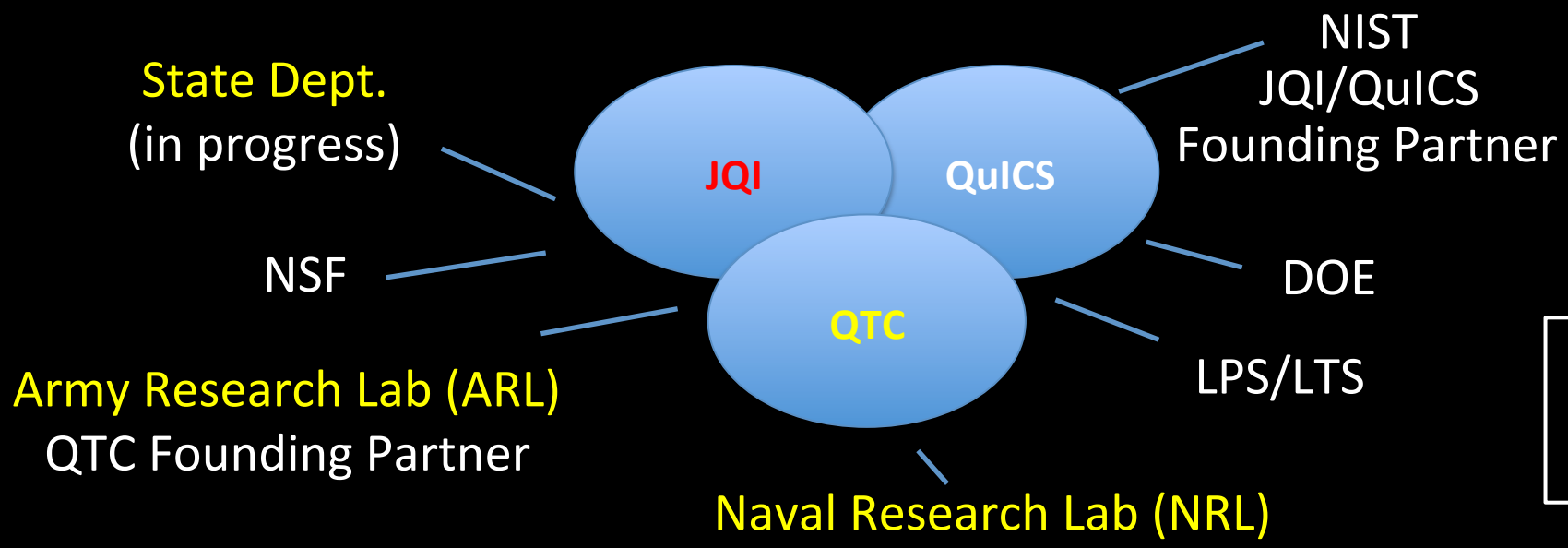


Connor Hart

Matthew Turner

Darcy Long

Kara Stamets

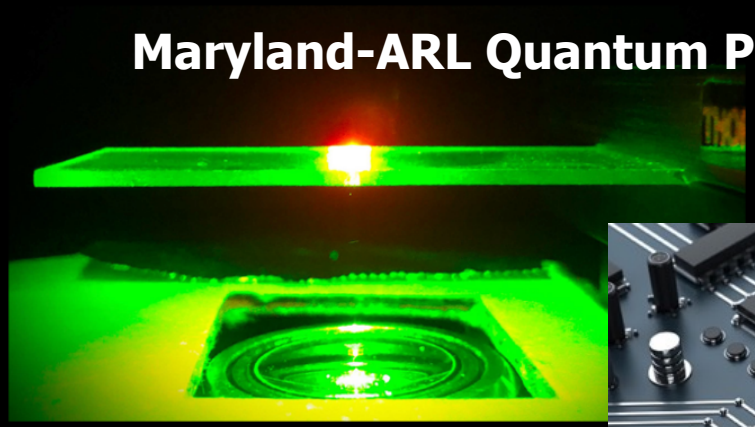


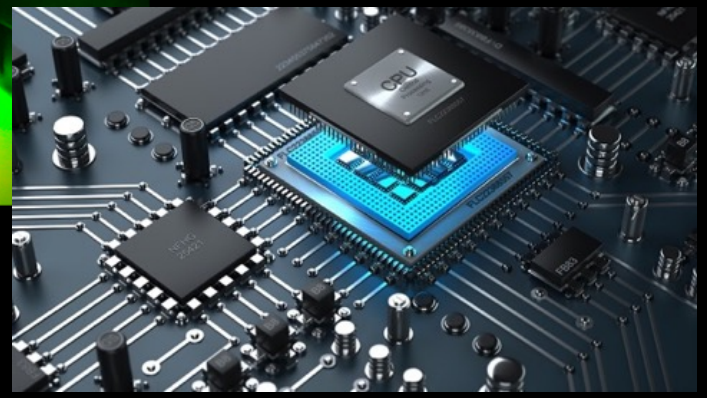
>100 students & postdocs

External award support from IREAP

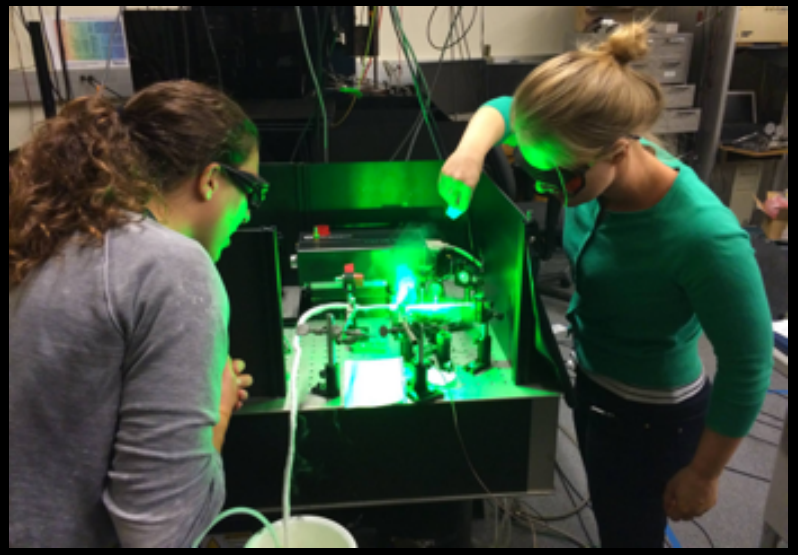
QTC innovate — Leading quantum tech platforms

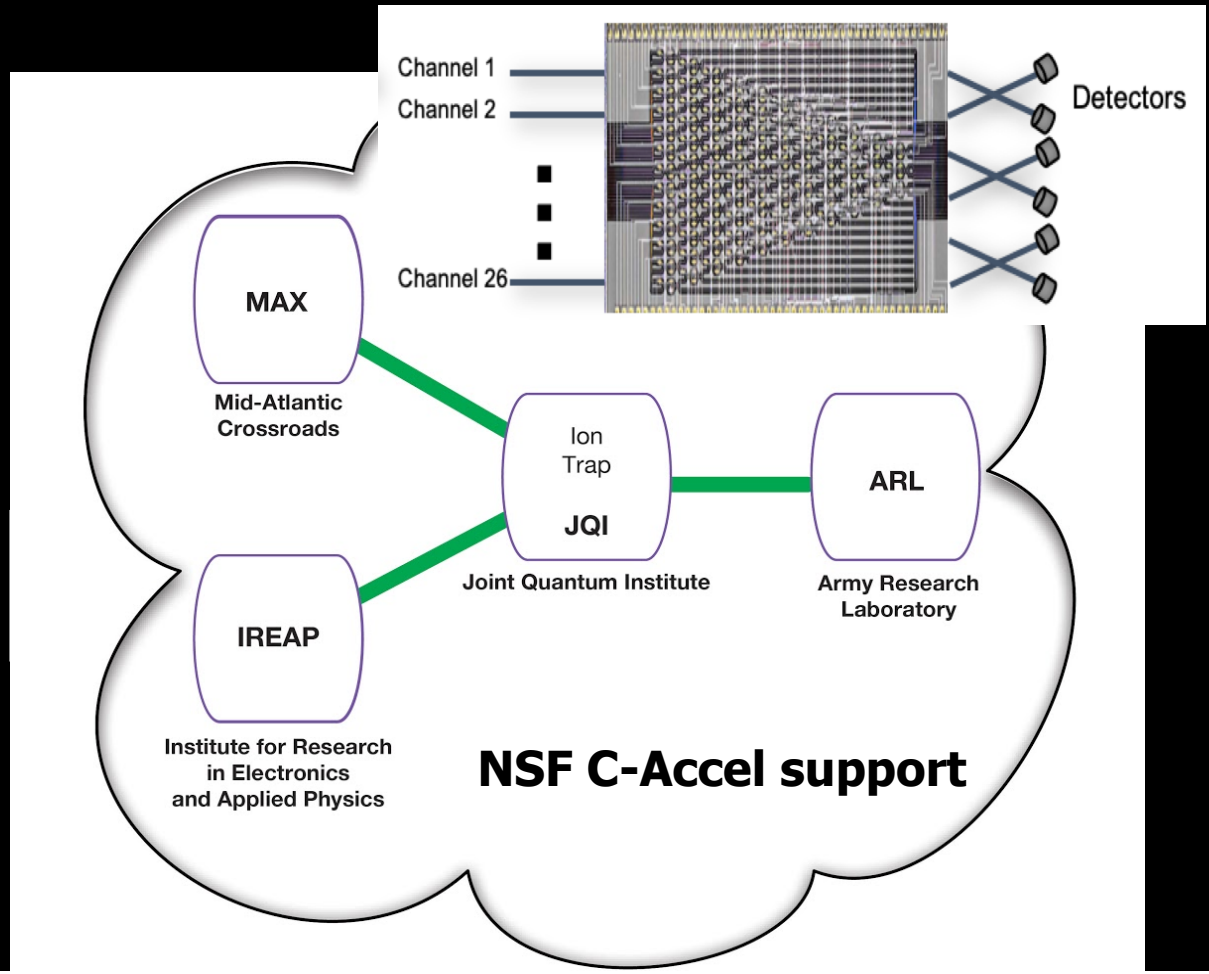
Maryland-ARL Quantum Partnership





Quantum Diamond Microscope (QDM)





MARQI — Mid-Atlantic Region Quantum Internet

QTC translate — Partners program

Founding Partners

A. James Clark School of Engineering

College of Computer, Mathematical, & Natural Sciences

U.S. Army

DEVCOM Army Research Laboratory

Inaugural Partners

element six™ De Beers Group

IONQ

TDF Ventures

leidos

U.S. Naval Research Laboratory

QTC educate — Quantum engineering curricula

- Coherent curriculum for undergraduates
- Introductory course sequence + advanced courses + project experience
- All quantum tech courses "housed" in Clark School?
- Minor in quantum engineering?

- Masters program?
- Certificate program for professionals?

In progress…

QTC educate — Quantum 101 for Leidos staff

Alicia Kollar
Assistant Professor

Connor Hart
QTC Scientist

Matthew Turner
QTC Scientist

What Is Quantum Technology?

Quantum Computing and Simulation
- Core principles
- How it differs from classical

Quantum Sensing
- Core platforms and near-term applications

Q & A

Nov. 5th

40+ Leidos staff

Organized by Amanda Stein

QTC mission — Build bridges in quantum tech

Research

Applications

Innovate – Translate – Educate

Thank you

QTC @ UMD